Crossover and mutation operators of genetic algorithms

ABSTRACT

Genetic algorithms (GA) are stimulated by population genetics and evolution at the population level where crossover and mutation comes from random variables. The problems of slow and premature convergence to suboptimal solution remain an existing struggle that GA is facing. Due to lower diversity in a population, it becomes challenging to locally exploit the solutions. In order to resolve these issues, the focus is now on reaching equilibrium between the explorative and exploitative features of GA. Therefore, the search process can be prompted to produce suitable GA solutions. This paper begins with an introduction, Section 2 describes the GA exploration and exploitation strategies to locate the optimum solutions. Section 3 and 4 present the lists of some prevalent mutation and crossover operators. This paper concludes that the key issue in developing a GA is to deliver a balance between explorative and exploitative features that complies with the combination of operators in order to produce exceptional performance as a GA as a whole.

Keyword: Crossover operator; Mutation operator; Exploitation; Exploration